

USSR

POMANSKAYA, L. A., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 4, 1970, pp 36-42

microbe (1-100 cells) were inoculated at the same time, only Listeria was isolated from the dead mice. Only when 1000 or more microbial cells of F. tularensis were inoculated did both cultures grow luxuriantly.

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UDC 576.851.45.095.38:576.851.156

USSR

POMANSKAYA, L. A., Tula Oblast Sanitary Epidemiological Station  
"Relationships Between the Agents of Tularemia and Listeriosis in vitro and in vivo"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 4, 1970, pp 36-42

Abstract: Experiments in vitro and in vivo showed that there are definite antagonistic relationships between Francisella tularensis and Listeria monocytogenes. The presence of even a small number of Listeria sharply inhibited or completely suppressed the growth of the former on solid and in liquid culture media. Simultaneous subcutaneous inoculation of albino mice with a single lethal dose of F. tularensis and various doses of L. monocytogenes (up to 100 million microbial cells) frequently lengthened the infectious process by as much as 22-27 days, and reduced the extent of contamination of the viscera with F. tularensis. Tularemia cultures were isolated with difficulty while the Listeria grew profusely. Some mice survived a lethal dose of F. tularensis (in a few cases even when lethal doses of L. monocytogenes were used). When 10 lethal doses of Listeria (1 billion cells) and lethal doses of the tularemia

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USSR

UDC 669.15\*24:669.014.623

~~POVARIN, YU. M.~~, GRIGORENKO, G. M., LAKOMSKIY, V. I., TORIKHOV, G. F., and  
SHEREVERA, A. V., Kiev

"On the Solubility of Nitrogen in Iron-Nickel Melts"

Moscow, Izvestiya Akademii Nauk SSSR, Metally, No 4, Jul/Aug 72, pp 32-36

Abstract: The solubility of nitrogen in iron, nickel, and iron-nickel alloys with 21.5% Ni and 59.0% Ni was experimentally investigated by the method of smelting the metal in an electromagnetic field in a gas flow (Ar, N, He) with subsequent hardening. The N solubility in Fe was investigated in the 1870-2860°K temperature interval, and in Fe-Ni alloys in the interval from the melting point to 2500°K. The temperature dependences of N solubility in Fe, Ni, and Fe-Ni alloys and the effect of Ni concentration in Fe-Ni alloys on the N heat of solution are shown. The temperature dependences of the N interaction parameter for Fe-Ni alloys are compared with data of other authors. The N solubility in Fe-Ni alloys was found to comply with the square root principle. An analytical expression was derived for the dependence of N solubility on the temperature and the Ni concentration in the Fe alloy. Five illustrations, one table, three formulas, twelve bibliographic references.

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1/2 013 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--PRINCIPLES OF DATA CLASSIFICATION AND CODING IN AUTOMATIC SYSTEMS  
OF PRODUCTION CONTROL -U-  
AUTHOR--POMAZAN, V.M.  
COUNTRY OF INFO--USSR  
SOURCE--STANDARTY I KACHESTVO, 1970, NR 5, PP 13-15  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., MECH., IND., CIVIL AND  
MARINE ENGR  
TOPIC TAGS--INDUSTRIAL AUTOMATION, DATA CORRELATION, AUTOMATIC CONTROL  
SYSTEM  
  
CONTROL MARKING--NO RESTRICTIONS  
  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1997/0856 STEP NO--UR/0422/70/000/005/0013/0015  
  
CIRC ACCESSION NO--AP0119760  
UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0119760

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SYSTEM DESCRIBED SERVES FOR CLASSIFICATION AND CODING OF MANUFACTURING DATA TO BE EMPLOYED IN AUTOMATIC SYSTEMS OF CONTROL OF INDUSTRIAL ENTERPRISES. THE MOST IMPORTANT GROUPS OF DATA ARE INDICATED. THE METHODS OF CLASSIFICATION AND CODING OF CHOSEN PARAMETERS ARE DESCRIBED. THE DISCUSSION IS ILLUSTRATED BY AN EXAMPLE OF CLASSIFICATION OF DATA ON THE PERSONNEL STAFF OF AN ENTERPRISE.

UNCLASSIFIED

USSR

UDC 542.91:661.718.1

NURETDINOVA, O. N., NIKONOVA, L. Z., and ~~POVAZANOV~~, V. V., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Reaction of  $\alpha$ - and  $\beta$ -Oxides with Phosphorus Acid Dichlorides"

Moscow, Izvestiya Akademii Nauk, SSSR, Seriya Khimicheskaya, No 10, Oct 71, pp 2225-2230

Abstract: Reactions of 3,3-dimethyloxethane (I) and 2-methyloxethane (II) and phenylphosphonic acid dichloride (III) and diethylamidophosphoric acid dichloride (IV) was carried out. (III) reacts vigorously with oxethanes forming with (I) the 0-2,2-dimethyl-3-chloropropylphenylphosphonic acid. The reaction of (II) with the above acid chlorides leads to the formation of isomeric products:  $C_6H_5P(Cl)OCH(CH_3)CH_2CH_2Cl$  and  $C_6H_5P(Cl)OCH_2CH_2CHClCH_3$ , the first compound forming predominantly. In contrast to (III), (IV) reacts with oxethanes only with heating or in the presence of a catalyst -- anhydrous  $ZnCl_2$ ; (IV) reacted with (I) gives diethylamido-2,2-dimethyl-3-chloropropylphosphoric acid dichloride and the reaction of (II) with (IV) produces a mixture of isomers:  $(C_2H_5)_2NP(Cl)OCH(CH_3)CH_2CH_2Cl$  and  $(C_2H_5)_2NP(Cl)OCH_2CH_2CHClCH_3$ .

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NURETDINOVA, O. N., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 10, Oct 71, pp 2225-2230

In contrast to oxethanes, 3-chloroethane does not react with (III) without heating; at 150° it yields  $C_6H_5P(=S)Cl_2$ . The direction of the opening of epoxy ring was studied on propylene oxide, leading to formation of isomeric mixtures. With  $PCl_3$  propylene oxide, leading to formation of isomeric mixtures. With  $PCl_3$  propylene oxide gives primarily  $Cl_2POCH(CH_3)CH_2Cl$ , with (III) the same direction predominates, the product being  $C_6H_5P(Cl)OCH(CH_3)CH_2Cl$ , while with (IV) a 50:50 mixture of isomers is formed:  $(C_6H_5)_2NP(Cl)OCH(CH_3)CH_2Cl$  and  $(C_2H_5)_2NP(Cl)OCH_2CHClCH_3$ .

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USSR

UDC 542.91+661.718.1

ARBUZOV, B. A., NIKONOVA, L. Z., NURETDINOVA, O. N., POMAZANOV, V. V., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Reaction of Oxetanes With Phosphorus Trichloride and Dichloroanhydrides of Alkylphosphorous Acids"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 6, Jun 70, pp 1426-1428

Abstract: The reaction of 3,3-dimethyloxetane with phosphorus trichloride or dichloroanhydride of alkylphosphorous acid yields the following type of compounds:  $RP(Cl)OCH_2C(CH_3)_2CH_2Cl$ , the R, b.p. (°C)/mm Hg,  $d_4^{20}$ , and  $n_D^{20}$  being:  $Cl$ , 86.5/10, 1.2867, 1.4926;  $CH_3O$ , 41-41.5/0.12, 1.1949, 1.4710;  $C_2H_5O$ , 102-104/10, 1.1536, 1.4620;  $C_3H_7O$ , 113/12, 1.1253, 1.4620. Under similar reaction conditions 2-methyloxetane yields  $RP(Cl)OCH(CH_3)CH_2CH_2Cl$ , the R, b.p. (°C)/mm Hg,  $d_4^{20}$ , and  $n_D^{20}$  being reported:  $Cl$ , 79.5-80/10, 1.3347, 1.4951;  $CH_3O$ , 89-91/10, 1.2316, 1.4712;  $C_2H_5O$ , 96-98/10, 1.1688, 1.4620;  $C_3H_7O$ , 110.5/11, 1.1421, 1.4600.

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DOMAZANSKAYA, L. F.

Biochemistry

UNCLASSIFIED

SECRETED ABSTRACT

Medical Sciences

SECTION 11

Res-59  
June 71

(10)

From: Institute of Evolutionary Physiology and Biochemistry Acad.  
I. K. Sechenov (LEPIL), Leningrad

Description:

(U) During this quarterly reporting period, 12 new articles were located from the Institute of Evolutionary Physiology and Biochemistry Acad. I. K. Sechenov (LEPIL). On the basis of these articles, it was possible to associate ten new persons with the Institute. Given below is a list of these persons, the subjects of the articles and the dates:

Barinov, Ya. Yu.	antidiuresis	1970 (3)
Frale, L.	phospholipids	1969 (6)
Grigoren, D. M.	digestion	1970 (5)
Lapina, A. V.	muscle physiology	1970 (6)
Manel, P.	phospholipids	1969 (7)
Plavina, I. I.	spectrophotometer	1970 (7)
Pozdnyakova, L. F.	phospholipids	1969 (4)
Shkolnikov, S. A.	nucleotides	1970 (8)
Serebrenikova, T. Z.	muscle physiology	1969 (9)
Timofeeva, M. M.	cholinesterase	1970 (10,11)

Five of the articles were considered by persons already identified with the Institute. These articles dealt with nerve physiology (12), muscle physiology (11) and enzyme activity (14-16).

(U) A large number of persons have been identified with the Institute during the preceding quarterly reporting periods. To provide a ready source of reference, given below is a list of all the LEPIL staff members identified to the present time.



USSR

UDC 669.295.004.2

FEYGIN, B. G., BELOSKURSKAYA, G. I., POMAZKINA, I. G., OSIPOVA, I. A.

"The Problem of Labor Hygiene in Titanium Production"

Tr. In-ta krayev. patol. KazSSR, (Works of the Institute of Regional Pathology, Kazakh SSR), 1970, Vol 19, pp 55-57, from RZh-Metallurgiya, No 2, 1971, Abstract No 2G199 by A. Tseydler)

Translation: Preliminary data on the general morbidity of workers in titanium production indicate that there are harmful factors influencing the morbidity of the respiratory organs and nasopharynx.

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USSR

UDC: 538.576.5:621.396.96

VARGANOV, M. Ye., KANAREYKIN, D. B., POMEKHIN, V. A.

"Transformations of the Polarized Basis in Statistical Modeling of the Dispersion Characteristics of Objects"

Moscow, Radiotekhnika i Elektronika, Vol 17, No 4, Apr 72, pp 730-736

Abstract: A statistical model of a radar target is defined as an adequate statistical description of the dispersion operator of the target defined in some polarization basis as a random function of coordinates and time. In the general case, the statistical model of an object is a multidimensional law of the probability distribution of its dispersion operator. One of the most widely used methods for synthesizing such a model is statistical modeling of the dispersion characteristics of the object. In the general case, the polarization basis of the radar station may not coincide with that of the dispersion operator on the initial modeling stage. This paper examines a procedure for transformation of the polarization basis as part of a general algorithm for statistical modeling of dispersion characteristics. Principles are defined which govern the change in the dispersion operator of an object due to transformations of this type.

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1/2 012 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--LIMITATION ON THE RANGE OF INCREASE OF WEAK INTERACTION CROSS  
SECTIONS -U-  
AUTHOR--POMERANCHUK, I.YA. *P*  
COUNTRY OF INFO--USSR  
SOURCE--YAD. FIZ. 1970, 11(4), 852-7  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--WEAK NUCLEAR INTERACTION, DISPERSION EQUATION, ANGULAR  
DISTRIBUTION, PARTICLE CROSS SECTION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3007/1070 STEP NO--UR/0367/70/011/004/0852/0857  
CIRC ACCESSION NO--AP0136490  
UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0136490

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PROBLEM OF ESTG. THE LOWER ENERGY LIMIT IS SOLVED THEORETICALLY AT WHICH THE WEAK INTERACTION CAN BE, IN PRINCIPLE, CONSIDERED TO BE SIMILAR TO THE STRONG ONE. ON THE BASIS OF THE DISPERSION RELATION, THE CONDITION OF UNITARITY AND THE GENERAL CHARACTER OF THE ANGULAR DEPENDENCE OF THE CROSS SECTION, THE LOWER LIMIT WAS DETD. AS  $S$  PRIME 0.5 LARGER THAN OR EQUAL TO SIMILAR TO 3 TIMES 10 PRIME 15 EV.

UNCLASSIFIED

UDC 519.281

USSR

VOLODIN, I. N., POMERANETS, B. M., SHIL'NIKOVA, V. D.

"Asymptote of Distribution of Sampling Correlation Coefficient and Its Statistical Applications"

Uch. Zap. Kazan. Un-t. [Scientific Writings of Kazan' University], Vol 130, No 3, 1970, pp 3-17 (Translated from Referativnyy Zhurnal Kibernetika, No 3, 1971, Abstract No 3 V145 by Ye. Markova).

Translation: Asymptotic formulas are produced for the distribution of the sampling correlation coefficient  $r$  and the Fisher transform of its coefficient  $L = \frac{1}{2} \ln \frac{1+r}{1-r}$ , similar to the asymptotic Edgson-Kramer expansions for sums of independent random quantities. From these expansions, we can easily find asymptotic formulas for the quantiles of the distributions of  $r$  and  $L$ , asymptotic formulas for the confidence limits of correlation coefficient  $\rho$  and asymptotic formulas to estimate the number of observations necessary to differentiate two hypotheses  $H_0(\rho \leq \rho_0)$  and  $H_1(\rho > \rho_1)$  with fixed probabilities of errors of the first kind ( $\alpha$ ) and second kind ( $\omega$ ). The principal results of the work are formulated as two lemmas, two theorems and five results. Calculation of the necessary number of

UDC 519.281

USSR

VOLODIN, I. N., POMERANETS, B. M., SHIL'NIKOVA, V. D., Uch. Zap. Kazan. Un-t.,  
Vol 130, No 3, 1970, pp 3-17.

observations for the most commonly used  $\epsilon$  and  $\omega$  are presented in a table appended  
to the article.

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# POMERANETS, K. S.

Doc 55899  
5 May 72

- 73 -

Let us consider the internal water temperature fluctuations with periods from several hours to several days, using standard hydrologic observations every three hours for two months obtained by the Fourth Atlantic Expedition of the Main Administration of the Hydrometeorological Service in the Far-Eastern District of the Atlantic Ocean in the summer of 1967 on the Okeanograf and Ayberg. Projects of this expedition were performed for the first time in the Atlantic at that time [3]. Let us also note that the preliminary results of analyzing the observations in the test areas in the tropical Atlantic and the Indian Ocean [1, 2, 10] primarily pertain to the stratified structure of currents and, in part, the short-period internal waves.

In recent years, the expeditionary work in the ocean at long-term stations and in test areas [2, 10] have acquired significant dimensions. The information obtained as a result of such projects is required to solve various oceanological problems. In particular, to study internal waves. The actual information on this phenomenon is entirely inadequate, and direct measurements of the internal waves have not been realized up to now. The fluctuations of the oceanological elements at different depths serve as an indicator of these waves. The time structure and statistical characteristics of the internal waves can be determined by observations of such fluctuations at one fixed point of the ocean where the duration and discreteness of the observations must correspond to the investigated scales of the phenomena.

The results of a statistical analysis of time series of isotherms lasting two months in the Far-Eastern region of the North Atlantic are discussed. The greatest fluctuations are noted in the layers of the seasonal and primary thermocline. The deviations from the normal distribution law are most significant in the primary thermocline. Spectral analysis of the time series of isotherms revealed multi-hour and 12-hour cyclicity of meteorological and tidal origin.

Article by I. D. ZYKOV, Candidate of Geographic Sciences, K. S. POMERANETS, Leningrad Division of the State Oceanographic Institute, Moscow, Hydrofizika i Gidrofizika, Krasnodar, No 3, 1972, submitted 27 July 1971, pp 69-74

STATISTICAL ANALYSIS OF THE INTERNAL OSCILLATIONS OF WATER TEMPERATURE IN THE OCEAN ACCORDING TO PROLONGED OBSERVATION DATA

UDC 551.466.82.551.463.6

USSR

UDC: 550.834:622.241

*P*  
FROYMOVICH, B. N., POMERANTSEV, L. I., GERASIMOV, N. N., UR'YASOVA, L. I., All-Union Scientific Research Institute of Geophysical Prospecting Methods; Special Design Office of Electrical Measuring Instruments

"A Method of Measuring the Apparent Resistance of Rocks"

Moscow, Otrkytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 5, 1970, p 71, patent No 261590, filed 24 Nov 66

Abstract: This Author's Certificate introduces a method of measuring the apparent resistance of rocks on alternating current by means of an electromagnetic mirror ratiometer-insert in a light-beam oscilloscope. The procedure consists of sending the signal of apparent resistance to the measurement loop of the ratiometer, and part of the supply current to the current loop of the ratiometer. As a distinguishing feature of the patent, measurement accuracy is improved by rectifying the measurement signal of the apparent resistance and the fraction of the supply current before feeding them to the ratiometer loops.

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1/2 035 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--PHYSICAL PRINCIPLES OF QUANTUM GYROSCOPICS -U-  
AUTHOR--(02)--POMERANTSEV, N.M., SKROTSKIY, G.V.  
COUNTRY OF INFO--USSR P  
SOURCE--USPEKHI FIZICHESKIKH NAUK, VOL. 199, MAR. 1970, P. 361-394  
DATE PUBLISHED--MAR70  
SUBJECT AREAS--NAVIGATION  
TOPIC TAGS--GYROSCOPE, QUANTUM DEVICE, PHOTON, GYRO THEODOLITE, DIRECTION  
FINDER  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3001/1393 STEP NO--UR/0053/70/100/000/0361/0394  
CIRC ACCESSION NO--AP0126931  
UNCLASSIFIED

2/2 035

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0126931

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. REVIEW OF THE CURRENT STATE OF THE ART IN THE FIELD OF QUANTUM GYROSCOPICS A BRANCH OF QUANTUM ELECTRONICS DEALING WITH DEVICES WHICH UTILIZE THE GYROSCOPIC PROPERTIES OF PARTICLES WHICH FORM THE WORKING BODIES OF THEIR SENSORS. PHYSICAL PHENOMENA WHICH MAY BE USEFUL FOR THE CREATION OF NUCLEAR MAGNETIC THEODOLITES, NUCLEAR GYROSCOPES, ELECTRON GYROSCOPES AND DIRECTION FINDERS WITH OR WITHOUT OPTICAL PUMPING, AND PHOTON GYROSCOPES ARE CONSIDERED. ESSENTIAL IN ALL THESE DEVICES IS THE UTILIZATION OF COHERENT ENSEMBLES OF THE MECHANICAL OR MAGNETIC PROPERTIES OF ATOMIC NUCLEI, ATOMS, ELECTRONS, OR PHOTONS. THE PHOTON RING GYROSCOPE IS NOTED AS ONE OF THE MOST PROMISING DEVICES OF THIS TYPE.

FACILITY: MOSKOVSKII FIZIKO TEKHNICHESKII INSTITUT, MOSCOW, USSR.

1/2 029 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--RADIANT HEAT TRANSFER IN A DUCT WITH VARIABLE TEMPERATURE OF  
RADIATING MEDIUM -U-  
AUTHOR-(02)-MIKK, I., POMERANTSEV, V. P  
COUNTRY OF INFO--USSR  
SOURCE--TALLINN, IZVESTIYA AKADEMII NAUK ESTONSKOY SSR, FIZIKA,  
MATEMATIKA, JANUARY-MARCH 1970, PP 100-103  
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--HEAT TRANSFER, APPLIED MATHEMATICS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3001/0091

STEP NO--UR/0458/70/000/000/0100/0103

CIRC ACCESSION NO--AP0125921

UNCLASSIFIED

2/2 029

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0125921

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MICROFICHE OF ABSTRACT CONTAINS GRAPHIC INFORMATION. THIS ARTICLE CONCERNS THE PROBLEM OF RADIANT HEAT TRANSFER IN A STRAIGHT DUCT CONTAINING A MEDIUM WITH A ONE DIMENSIONAL TEMPERATURE FIELD ALONG THE DUCT. THE EQUATION OF THE DENSITY OF THE RESULTING HEAT FLOW SHOWN ON MICROFICHE IS DERIVED WITH THE ASSUMPTION OF ABSOLUTE BLACKNESS OF THE WALLS AT A TEMPERATURE OF 0 DEGREES K. IF THE MEDIUM IS GREY, NONDISSIPATING, AND HOMOGENEOUS, EQUATION (1) CAN BE EXPRESSED IN DIMENSIONLESS COORDINATES IN THE FORM SHOWN ON MICROFICHE. THE TEMPERATURE FIELD OF THE MEDIUM IS GIVEN AS BLACK BODY RADIATION DENSITY AS A FUNCTION OF THE Z COORDINATE SHOWN ON MICROFICHE. THE SOLUTION OF THE PROBLEM IS OBTAINED FROM THE EQUATION SHOWN ON MICROFICHE WHERE THE COEFFICIENTS ARE DETERMINED FROM THE EQUATION SHOWN ON MICROFICHE. AS AN EXAMPLE, THE RADIATION AT THE MIDDLE OF THE FLAT WALL OF A DUCT WITH A SEMICIRCULAR CROSS SECTION IS STUDIED. IN THIS CASE, THE COEFFICIENTS  $V$  ARE CALCULATED FROM THE EQUATION SHOWN ON MICROFICHE AND SOME OF THE VALUES ARE PLOTTED IN THE FIGURE, SHOWING  $V_{SUB2}$  AND  $V_{SUB4}$  AS FUNCTIONS OF THE OPTICAL DENSITY. IT IS SHOWN THAT THE RADIATION OF THE MEDIUM CAN BE CALCULATED BY USING THE DEGREE OF BLACKNESS OF THE ISOTHERMAL RADIATION, WHICH IS MULTIPLIED BY A CORRECTION FACTOR. THE RADIATION OF THE NONISOTHERMAL MEDIUM MAY BE GREATER OR SMALLER THAN THAT OF THE ISOTHERMAL MEDIUM. THE TEMPERATURE VARIES MORE STRONGLY WITH THE DEGREE OF BLACKNESS AS THE OPTICAL DENSITY OF THE MEDIUM INCREASES.

UNCLASSIFIED

USSR

MIKK, I., POMERANTSEV, V. (Tallinn Polytechnical Institute, Leningrad Polytechnical Institute)

"Radiant Heat Transfer in a Duct with Variable Temperature of Radiating Medium"  
Tallinn, Izvestiya Akademii Nauk Estonskoy SSR, Fizika, Matematika, January-March 1970, pp 100-103

**Abstract:** The article concerns the problem of radiant heat transfer in a straight duct containing a medium with a one-dimensional temperature field along the duct. The equation of the density of the resulting heat flow

$$E_{\text{res}}(M) = E_{\text{inc}}(M) = \frac{1}{4} \int_0^L \int_{F_0} \eta(P) \exp\left[-\int_{L^*}^L k dL^*\right] d\varphi_{M,N} dL^*. \quad (1)$$

is derived with the assumption of absolute blackness of the walls at a temperature of 0°K. If the medium is grey, nondissipating, and homogeneous, equation (1) can be expressed in dimensionless coordinates in the form

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USSR

MIKK, I., POMERANTSEV, V., Izvestiya Akademii Nauk Estonskoy SSR, Fizika, Matematika, January-March 1970, pp 100-102

$$E_{\text{res}}(M) = \frac{1}{\pi} \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \int_0^l E(P) \exp[-(l-l')] \cos^2 \beta \cos \alpha d\beta d\alpha dl'.$$

The temperature field of the medium is given as black-body radiation density as a function of the Z-coordinate

$$E(z) = \sum_{n=0}^{\infty} \frac{1}{n!} E^{(n)}(z_0) (l-l')^n \sin^n \beta.$$

The solution of the problem is obtained from the equation

$$E_{\text{res}}(z_0) = \frac{1}{\pi} \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \left\{ E(z_0) (1 - e^{-t}) + E''(z_0) \times \left[ 1 - \left( 1 + t + \frac{1}{2} t^2 \right) e^{-t} \right] \sin^2 \beta + \dots \right\} \cos^2 \beta \cos \alpha d\beta d\alpha.$$

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USSR

MIKK, I., POMERANTSEV, V., Izvestiya Akademii Nauk Estonskoy SSR, Fizika, Matematika, January-March 1970, pp 100-103

$$z = z_0 \left\{ 1 + \frac{1}{4} \frac{E''(z_0)}{E(z_0)} v_2 + \frac{1}{8} \frac{E^{(4)}(z_0)}{E(z_0)} v_4 + \frac{5}{64} \frac{E^{(6)}(z_0)}{E(z_0)} v_6 + \dots \right\},$$

where the coefficients are determined from the equation

$$v_n = \frac{\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \left( 1 - e^{-t} \sum_{m=0}^n \frac{t^m}{m!} \right) \sin^n \beta \cos^2 \beta \cos \alpha \, d\beta \, d\alpha}{e_0 \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \sin^n \beta \cos^2 \beta \cos \alpha \, d\beta \, d\alpha}$$

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USSR

MIKK, I., POMERANTSEV, V., Izvestiya Akademii Nauk Estonskoy SSR, Fizika, Matematika, January-March 1970, pp 100-103

As an example, the radiation at the middle of the flat wall of a duct with a semicircular cross section is studied. In this case, the coefficients  $\gamma$  are calculated from the equation

$$\gamma_2(r) = \frac{1 - \frac{2}{\pi} (1 - r^2) \left[ (1 + r^2) \int_0^\infty K_0(u) du + r K_0(r) - r^2 K_1(r) \right] - \frac{4}{\pi} r^2 K_1(r)}{1 - \frac{2}{\pi} \left[ (1 + r^2) \int_0^\infty K_0(u) du + r K_0(r) - r^2 K_1(r) \right]}$$

and some of the values are plotted in the figure, showing  $\gamma_2$  and  $\gamma_4$  as functions of the optical density. It is shown that the radiation of the medium can be calculated by using the degree of blackness of the isothermal radiation, which is multiplied by a correction factor. The radiation of the nonisothermal medium may be greater or smaller than that of the isothermal medium. The temperature varies more strongly with the degree of blackness as the optical density of the medium increases.

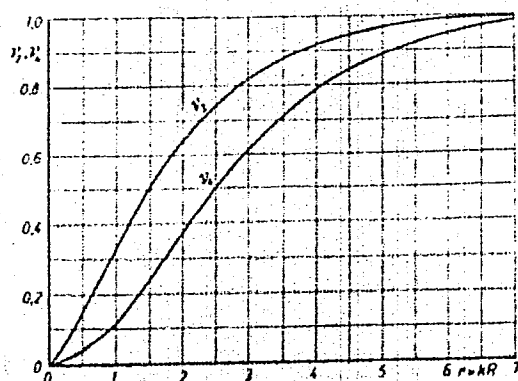
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USSR

MIKK, I., POMERANTSEV, V., Izvestiya Akademii Nauk Estonskoy SSR, Fizika, Matematika, January-March 1970, pp 100-103



5/5

1/2 024 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--SYNTHESIS AND STRUCTURE OF ADDUCTS OF ETHOXYCARBONYLCARBENE WITH  
CIS, AND TRANS,1,3,PENTADIENE -U-  
AUTHOR--(04)--LISHANSKIY, I.S., POMERANTSEV, V.I., TURKOVA, L.D.,  
KHACHATUROV, A.S.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. ORG. KHIM. 1970, 6(5), 918023  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--CHEMICAL SYNTHESIS, MALEIC ANHYDRIDE, IR SPECTRUM, NUCLEAR  
MAGNETIC RESONANCE, ISOMER, ETHOXY COMPOUND, CYCLOPROPANE, AMINE  
DERIVATIVE, ALKYNE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAHE--3006/1336 STEP NG--UR/0366/70/006/005/0918/0923  
CIRC ACCESSION NO--AP0135010

UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--APC135010

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. TECH. PIPERYLENE WAS TREATED WITH MALEIC ANHYDRIDE TO COMPLEX TRANS,1,3,PENTADIENE (I) AND LEAVE PURE CIS,1,3,PENTADIENE (II). I WAS OBTAINED PURE BY TREATING THE ISOMER MIXT. WITH SO SUB2 AND DECOMPG. I SULFONE. THE ACTION OF N SUB2 CHCO SUB2 ET ON I GAVE ET CIS,3,METHYL,TRANS, 2,VINYLCYCLOPROPANECARBOXYLATE (III), TRANS,E,METHYL,CIS, 2,VINYL ANALOG OF III, ET TRANS,2,(TRANS,PROPYLENE)CHCLOPROPANECARBOXYLATE (IV), AND CIS,2,(TRANS PROPYLENE) ANALOG OF IV. SIMILARLY, II REACTED WITH N SUB2 CHCO SUB2 ET TO GIVE TRANS,3,METHYL, TRANS,2,VINYL III ANALOG, CIS,3,METHYL,CIS,2,VINYL ANALOG OF III, TRANS,2,(CIS PROPYLENE) ANALOG OF IV, AND CIS,2,(CIS PROPYLENE) ANALOG OF IV. THESE COMPS. WERE IDENTIFIED BY IR AND NMR SPECTROSCOPY. FACILITY: INST. VYSKONMCL SDEDIN., LENINGRAD, USSR.

UNCLASSIFIED

1/2 016 UNCLASSIFIED PROCESSING DATE--11SEP70  
TITLE--KINETICS OF METHANOL DECOMPOSITION ON A ZINC-CHROMIUM-COPPER  
CATALYST -U-  
AUTHOR--MUKHLENOV, I.P., POMERANTSEV, V.M., SYRKINA, M.L.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(2), 362-6  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--METHANOL, CATALYTIC DECOMPOSITION, METAL CATALYST, ZINC,  
CHROMIUM, COPPER, CHEMICAL LABORATORY APPARATUS, CATALYST ACTIVITY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1987/0461 STEP NO--UR/0080/70/043/002/0362/0367  
CIRC ACCESSION NO--AP0104074  
UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC. ACCESSION NO--AP0104074

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DECOMP. PROCESS WAS STUDIED IN LAB. EXPTS. IN A FLOW THROUGH CIRCULATING APP. AT THE FOLLOWING OPERATING CONDITIONS: QUANTITY OF THE CATALYST 1 CM PRIME3, REACTION TEMP. 240 TO 340DEGREES, CONTACT TIME 0.18 TO 0.36 SEC, AND THE CHEM. COMPN. OF THE FEED MIXT.: CO 10 TO 20, MECH 4 TO 10, AND H 70 TO 86 VOL. PERCENT. THE INVESTIGATED CATALYST (GRAIN SIZE 0.7 MM, ZNO 45.4, CR SUB2 O SUB3 21.2, AND CUO 33.4 WT. PERCENT) WAS REDUCED WITH H AT 280DEGREES FOR 8 HR AND STABILIZED AT 350DEGREES FOR 60 HR. THE DEGREE OF THE MECH. DECOMP. WAS REGARDED AS THE MEASURE OF THE CATALYST ACTIVITY. THE RESULTS ARE PRESENTED IN FORM OF DIAGRAMS. THE FOLLOWING KINETIC EQUATION IS PROPOSED:  $U = K \frac{P_M P_{CO}^{0.25}}{P_{CO} + 2H \text{ SUB}_2}$ , WHERE U IS THE RATE OF THE REACTION MECH YIELDS CO PLUS 2H SUB2, K IS THE RATE CONST., AND PM AND PCO ARE THE PARTIAL PRESSURES OF MECH AND CO, RESP. THE CALCD. RATE CONSTS. ARE 1.44, 2.9, AND 3.85 FOR 301, 322, AND 329.5DEGREES, RESP. THE DECOMP. OF MECH IS A CONSECUTIVE PROCESS. THE LIMITING STAGE IS THE DESORPTION OF CO FROM THE CATALYST SURFACE.

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--18SEP70

1/2 014  
TITLE--OXIDATION OF SULFUR DIOXIDE ON A VANADIUM CATALYST -U-

AUTHOR--POMERANTSEV, V.M.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(2), 423-6

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CATALYTIC OXIDATION, VANADIUM COMPOUND, SULFUR OXIDE, CHEMICAL  
REACTION RATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1987/0333

STEP NO--UR/0080/70/043/002/0423/0426

CIRC ACCESSION NO--AP0103988

UNCLASSIFIED

272 014

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0103988

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A MECHANISM IS PROPOSED IN WHICH O  
SUB2 MOLLS. ARE ADSORBED AT ACTIVE CENTERS ON THE CATALYST AND THEN REACT  
WITH SO SUB2 ONE O ATOM AT A TIME. AN EQUATION IF DERIVED THAT RELATES  
THE REACTION RATE TO THE RATE CONST., THE EQUIL. CONST., TEMP., AND THE  
PARTIAL PRESSURES OF O SUB2, SO SUB2, AND SO SUB3.

89

UNCLASSIFIED

Acc. Nr:

AP0041898

Abstracting Service:

CHEMICAL ABST.

Ref. Code:

4R 0080

89555s Oxidation of methanol. Pomcrantsev, V. M.  
(Leningrad. Tekhnol. Inst. im. Lenzoveta, Leningrad, USSR).  
Zh. Prikl. Khim. (Leningrad) 1970, 43(1), 187-9 (Russ). (cf.  
CA 63: 12992d). Math. expression for the rate ( $r$ ) of the oxidn.  
of MeOH (I) to  $H_2CO$  (II) on a  $Fe_2O_3-MoO_3$  catalyst was derived  
as  $r = k_1 p_M / (1 + k_2 p_F / p_M p_O^{0.5})^{0.5}$  where  $p_M$ ,  $p_F$  and  $p_O$  are  
partial pressures of I, II, and O resp., and  $k_1$  and  $k_2$  are consts.

Michael K. Hrenoff

REEL/FAME

19751783

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USSR

UDC 536.46:533.6

KORCHUNOV, Yu. N., POMERANTSEV, V. V.

"The Combustion Mechanism of Natural Solid Fuels"

V sb. Gorennye i vzryv (Combustion and Explosion -- Collection of Works),  
Moscow, "Nauka", 1972, pp 191-194 (from RZh-Mekhanika, No 3, Mar 73,  
Abstract No 3B935)

Translation: The foundations of a technique for calculating the combustion processes for natural solid fuels are presented. It is shown that the combustion process should be analyzed on the basis of current ideas concerning the dynamics of the thermal disintegration of the organic mass of the solid. On this basis it is necessary to consider conditions for the formation of volatile-oxidizer mixtures in direct proximity to the fuel particles and as a whole in time as a function of the temperature conditions. Knowing the quantitative and qualitative characteristics of this mixture and the conditions governing their change in time, one can determine the nature of the change in the period for induction of its combustion as a function of time, and on this basis one can determine the time of the initiation of intensive oxidation of the emitted volatile compounds. Conditions for the combustion of particles of peat of dimensions 0.1 and 1.0 mm upon their entry into a medium with constant temperature are discussed as an example. Authors' abstract.

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USSR

UDC 662.611

AKHMELOV, D. B., LOBYSHEV, V. A., POMERANISEV, V. V.

"Investigation of the Flame-Propagation Equations and Determination of the Total Kinetic Combustion Constants"

Trudy Leningradskogo Politekhnicheskogo Instituta (Works of the Leningrad Polytechnical Institute), No 316, 1970, pp 89-95 (From Referativnyy Zhurnal, Teploenergetika, No 1, 1971, Abstract No 1R42)

Translation: Calculation Expressions are obtained for the determination of basic combustion characteristics. The formula for determining the relationship of the rate of flame propagation to the conditions of heat removal agrees well with the formula for determination of the critical conditions of flame propagation. On the basis of this formula, a correction may be introduced for nonadiabaticity of the process when investigating the values of the total kinetic combustion constants. When experimentally determined values of the normal flame-propagation rate are used, a formula is proposed for determining the total kinetic combustion constants. 3 figures, 2 tables. 7 bibliographic entries.

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1/2 009 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--DETERMINATION OF TRACE AMOUNTS OF CESIUM BY REPEATED ISOTOPIC  
DILUTION WITH CESIUM 137 WITHOUT A CARRIER -U-  
AUTHOR--(03)-POMERANTSEVA, A.V., ZIMAKOV, I.YE., SPITSYN, V.I.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK SSSR, SER KHIM. 1970, (1) 3-7  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, NUCLEAR SCIENCE AND TECHNOLOGY  
TOPIC TAGS--ISOTOPE, CESIUM MICROCHEMICAL ANALYSIS, SOLVENT EXTRACTION,  
QUALITATIVE ANALYSIS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1988/0586 STEP NO--UR/0062/70/000/001/0003/0007  
CIRC ACCESSION NO--AP0105569  
UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0105569

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ISOTOPE DILN. TECHNIQUE WAS USED SATISFACTORILY FOR DETN. OF PRIME137 CS IN MICROQUANTITIES WITHOUT THE USE OF A CARRIER. THE ISOLATION OF CS WAS DONE BY EXTN. IN THE SYSTEM OF MG DIPICRYLAMINATE AND PHNO SUB2 IN 0.02N NAOH SOLN. THE EXTN. WAS SUBSTANTIALLY COMPLETE FOR 100-1000 MUG CS IN THE SAMPLE. THE EXT. IN PHNO SUB2 REQUIRED SOME 20 MIN FOR THE ACTUAL EXTN. FOR CONCN. OF 1-10 MUG CS-ML NO MORE THAN 3-5 INDEPENDENT DILNS. ARE NEEDED FOR OBTAINING DEPENDABLE DATA. THE METHOD INSURES DETN. OF PRIME137 CS WITH MEAN ERROR OF SMALLER THAN OR EQUAL TO 2.5PERCENT.

UNCLASSIFIED

1/2 015 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--EXTERNAL SECRETION OF THE LIVER IN DEFICIENCY OF POLYUNSATURATED  
FATTY ACIDS -U-  
AUTHOR-(02)-SHLYGIN, G.K., POMERANTSEVA, I.I.  
COUNTRY OF INFO--USSR  
SOURCE--PATOLOGICHESKAYA FIZIOLOGIYA I EKSPERIMENTAL'NAYA TERAPIYA, 1970,  
VOL 14, NR 2, PP 54-59  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--LIVER FUNCTION, DIET, FAT, MALNUTRITION, LIPID, FATTY ACID,  
PHOSPHOLIPID  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1988/0027 STEP NO--UR/0396/70/014/002/0054/0059  
CIRC ACCESSION NO--AP0105126  
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0105126

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPERIMENTS WERE PERFORMED ON RATS WHICH WERE GIVEN SYNTHETIC DIET DEVOID OF FAT FOR A NUMBER OF MONTHS. SURGICAL CANNULATION OF COMMON AND LOBAR BILE DUCTS WAS ACCOMPLISHED IN THESE ANIMALS IN HALF, ONE AND A HALF THREE, AND FIVE MONTHS. EVEN AT THE STAGE OF MARKED FAT DEFICIENCY THE SECRETION OF THE PRINCIPAL BILE COMPONENTS, LIPID COMPLEX, FATTY ACIDS, AND PHOSPHOLIPIDS PROVED TO BE ON A HIGH LEVEL. IN THIS PROCESS A VERY IMPORTANT ROLE IS PLAYED BY THE HEPATO INTESTINAL CIRCULATION OF SUBSTANCES: ITS DISTURBANCE UNDER THE MENTIONED CONDITIONS, LEADS TO DERANGEMENT OF THE EXTERNAL SECRETION OF THE LIVER. THE RESULTS OBTAINED ARE REGARDED AS A MANIFESTATION OF ACTIVE ADAPTATION OF THE LIVER MAINTAINING THE COURSE OF METABOLISM UNDER CONDITIONS OF INADEQUACY OF ESSENTIAL COMPOUNDS. FACILITY: LABORATORIYA FIZIOLOGII I PATOLOGII PISHCHEVARENIYA INSTITUTA PITANIYA AMH SSSR, MOSKVA.

UNCLASSIFIED

USSR

UDC: 681.3.06:51

VORONOV, A. A., MAKSIMISOV, M. M., POMERANTSEVA, I. V.

"Problems in Organizing Blocks of Information in the Planning of Atomic Power Installations"

V sb. Teoriya i praktika mashin. obrab. ekon. inform. (Theory and Practice in the Computer Processing of Economic Information--collection of works), Moscow, 1971, pp 65-72 (from RZh-Kibernetika, No 7, Jul 71, Abstract No 7V722)

[No abstract]

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USSR

UDX 772.99

POMERANTSEV, N.M.

"Radiation Pattern Of Thick Layer Holograms"

Kvantovaya elektronika (Quantum Electronics), Moscow, No 5(11), pp 118-121

Abstract: The dependence of the diffraction efficiency of thick-lobed phase holograms on the spatial frequency of the object being holographed is considered, and radiation patterns are constructed. The radiation pattern resulting from the same hologram has a variety of separate lobes the number of which is increased with an increase of the hologram thickness, the relative change of the refractive index, and the angle of incidence of the reference wave on the photosensitive layer. Together with an increase of the number of lobes, the width of the central lobe is decreased. 2 fig. 4 ref. Received by editors, 21 Jan 1972.

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USSR

UDC 772.99

POMERANTSEV, N.M.

"Radiation Pattern Of Thick Layer Holograms In An Exact Solution Of A Problem Of Light Diffraction"

Kvantovaya elektronika (Quantum Electronics), Moscow, No 5(11), pp 122-124

**Abstract:** A previous work by the author (Kvantovaya elektronika, No 5(11), 1972, p 118) considered the dependence of the diffraction efficiency of thick-layer phase holograms on the spatial frequency of the object being holographed, and radiation patterns were obtained. For construction of these patterns approximate solutions were used for solving the problem of light diffraction in thick layers, valid with fulfillment of the inequality  $\alpha \ll \cos^2 \beta$  where  $2\alpha$  is the maximum value of the relative change of the dielectric constant at the phase diffraction grating, and  $\beta$  is the angle of incidence of the reference and restoring waves at the grating. For  $\alpha \sim 0.1 \div 0.2$  it is found that the approximation used is, by this time, not applicable enough. However, such a value of  $\alpha$  occurs in practice, so the present paper considers a solution of the problem for the cases when the above inequality is not fulfilled. With the aid of a digital computer indices and Fourier coefficients of functions are calculated which make up a precise solution. The graphs presented give an indication of

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USSR

POMERANISEV, N. M., Kvantovaya elektronika, No 5(11), pp 122-124

the modifications which occur during a transition from an approximate to a precise solution for the dependence of the light intensity in the first order of diffraction on the thickness of a photosensitive layer. The author thanks M. Anshelis for substantial aid in the calculation. 6 fig. 5 ref. Received by editors, 11 Apr 1972.

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USSR

UDC 575.24

DOMSHLAK, M. G., POMERANTSEVA, M. D., and RAMAYYA, L. K.. Institute of General Genetics, Academy of Sciences USSR, Moscow

"Mutagenic Effect of Different Kinds of Radiation on the Germ Cells of Male Mice.  
IV. Genetic Effect of Fast Neutrons"

Moscow, Genetika, Vol 6, No 7, Jul 70, pp 73-82

Abstract: The radiosensitivity of mouse germ cell chromosomes in various stages of spermatogenesis was studied. It was found that the postmeiotic stages are more sensitive to fast neutrons than the spermatogonia. The mutation rate-dose relationship in mature sperm was linear at doses ranging from 18 to 216 rad. In the spermatogonia, the nature of the relationship between the frequency of dominant lethals and the dose differed from that observed in the postmeiotic stages, where an increase in dose had little effect. The frequency of reciprocal translocations in the spermatogonia increased linearly with doses up to 72 rad. Higher doses did not increase the mutation rate, but at 216 rad the frequency of translocations decreased sharply. The differences between the stages of spermatogenesis with respect to genetic radiosensitivity are thus identical after exposure to fast neutrons and after X-ray irradiation. The relative genetic effectiveness (RGE) of fast neutrons was the same (about 4.5) for different types of genetic injuries, regardless of the stage of spermatogenesis.

UDC 575.24

USSR

DOMSHLAK, M. G., POMERANTSEVA, M. D., and RAMAYYA, L. K., Institute of General Genetics, Academy of Sciences USSR, Moscow

"Mutagenic Effect of Various Types of Radiation on Spermatogonia in Mice. V. The Mutagenic Effect of Single and Fractionated Irradiation with Fast Neutrons on Spermatogonia in Mice"

Moscow, Genetika, Vol 6, No 8, Aug 70, pp 79-85

Abstract: The mutagenic effect of 1.5 Mev neutrons on spermatogonia was studied in experiments in which male mice were irradiated with total doses of 100 and 216 rad. The frequency of reciprocal translocations (determined directly on the spermatogonia) and the frequency of dominant lethal mutations (determined on breeding the irradiated males with nonirradiated females) were used as criteria. The mutation yield was higher after fractional irradiation than after irradiation with a single dose. This effect was evident at both dose levels but was more pronounced for a total dose of 216 rad than for 100 rad. In irradiation with X-rays, an increase in the frequency of mutations / on fractionation of the dose is observed at high doses only. After exposure to the full dose in a single irradiation, there was a higher rate of elimination of spermatogonial cells with an increased sensitivity to mutation. The results indicate the possibility of accumulating mutations by repeated irradiation with fractional doses.

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POMETOV, YU. D.

SPRS 56499  
14 JULY 72

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# SOME PARAMETERS OF HEMODYNAMICS AND ENERGY EXPENDITURES OF CREW MEMBERS OF THE "SOYUZ-6, 7" SPACESHIPS

Article by Yu. D. Pometov and V. V. Shchegolev; Moscow, Akademiya Voprosy Kosmonavtiki i Biologii i Meditsiny (Current Problems in Space Biology and Medicine), Moscow, 1971, p 227/

A study of hemodynamics and gas exchange of crew members of the "Soyuz-6, 7" ships was made under basal metabolism conditions a month before the launching and also on the second and fourth days after the flight was completed. The minute volume of circulation (MVC) was determined by the method of return breathing of CO<sub>2</sub> and gas exchange (oxygen consumption and release of carbon dioxide -- VO<sub>2</sub>, VCO<sub>2</sub>) was ascertained by the modified Douglas-Haldane method.

On the second day after landing all the cosmonauts exhibited an increase in the MVC averaging 4.0140.13 to 4.754 0.28 liters/minute or by 11.7%. The greatest increase in MVC was exhibited by G. S. Shonin and A. V. Filipchenko and was 0.7 and 1.5 liter/minute respectively. In a repeated determination on the fourth day the MVC even increased on the average for the group by 5% in comparison with the preceding investigation.

The increase in MVC was caused by a substantial increase in the pulse rate (PR) in all the cosmonauts (from 5542.3 to 6311.5 beats/minute, whereas the cardiac stroke volume during the investigation on the second day after the landing was even somewhat below the initial level for four of the five cosmonauts. It is interesting to note that the direction of changes in hemodynamics and metabolism coincided. In the investigation on the second day the energy expenditures had increased for all the cosmonauts on an average of 20% and had a tendency to a decrease in the repeated investigation on the fourth day.

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UDC 612.766.1-06:613.24

USSR

KAKURIN, L. I., PURAKHIN, YU. N., GEORGYEVSKIY, V. S., KATKOVSKIY, B. S.,  
VYSOTSKIY, V. G., CHEREPAKHIN, M. A., USHAKOV, A. S., LARICHEVA, K. A.,  
PETUKHOV, B. N., IVANOV, P. P., MACHINSKIY, G. V., MIKHAYLOV, V. M., ~~POMETOV~~  
~~YU. D.~~, and SMIRNOVA, G. I.

"Locomotor Activity of Man Kept on a Reduced Food Ration"

Moscow, Voprosy Pitaniya, No 3, May/Jun 1971, pp 7-12

Abstract: The combination of drastic limitation in locomotor activity with reduction to a low-calorie diet (down to basal metabolism) was studied in six healthy men 24-35 years of age who were confined to bed for a number of days under conditions of hypokinesia. Pronounced changes were observed in the functions of the cardiovascular, respiratory, nervous, and muscular systems of the body. Tabular data were collected on physiological tremor of closed eyes, maximum physical work fitness, muscle tone dynamics, and the cardiovascular system in the orthostatic position. Asthenia of the nervous system and a slowing down of the biopotentials in the cerebral cortex were observed. Likewise, it was noted that hypokinesia caused disturbances in body coordination and statics. The pulse rate increased and the arterial pulse pressure was

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SR

KAKURIN, L. I., Voprosy Pitaniya, No 3, May/Jun 1971, pp 7-12

reduced in persons subjected to the orthostatic test. Three persons reached a state of near collapse. These changes were attributed to a significant reduction in the compensating actions of the blood circulation. It was found that after about 10 days, the observed changes gradually decreased in the test subjects. This regression was largely of a functional character and was linked to the "detraining" of the various systems of the body. The authors believe that the severity of the changes in the body functions is directly proportional to the degree of hyperkinesia to which the tested persons were subjected. It is proposed that maintenance of homeostasis requires a certain level of motor activity even with a low-calorie ration.

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POMETOV, Yu. D.

Space  
Medicine

SO: JPRS 53801

19 AUG 71

UDC 616.173.1-06:612.766.2

CHANGE IN CARDIAC EJECTION UNDER THE INFLUENCE OF 15-DAY  
BED CONFINEMENT

6500772 (Proc. Med. Sci.)

Article by B. S. Katchevskiy and Yu. D. Pometov, Moscow, Kosmicheskaya  
Biologiya i Meditsina, Vol. 5, No. 3, 1971, pp. 63-74, submitted  
22 May 1970

**Abstract:** A significant increase in cardiac output related mainly to stroke volume was observed in five male test subjects during a 15-day bedrest experiment. Oxygen consumption and carbon dioxide production decreased gradually during the observation period. It is suggested that similar changes in cardiac output may occur during an early period of adaptation to weightlessness during spaceflight.

Orthostatic instability, decrease in physical performance, and change in water-mineral metabolism have been observed repeatedly after cosmonaut flights (N. M. Slesarenko, et al., 1962; M. M. Slesarenko, et al., 1963; L. I. Kharin and B. S. Katchevskiy, 1966; Yu. V. Marochin, et al., 1965; Ye. I. Vorob'yev, et al., 1969; Bery, et al., 1966; Dietlein and Monnau, 1966; Bery, 1969). This was manifested very clearly in the cosmonaut A. G. Nikolayev and V. I. Sevast'yanov after their 16-day flight on the "Soyuz-9" ship.

Many authors feel that the principal reason for such changes is body adaptation to new conditions, and especially adaptation of the cardiovascular and other systems to the disappearance or decrease of hydrostatic pressure of the body liquid medium and hypokinesia.

An adequate number of facts has already been accumulated which makes it possible to estimate the final effect of such adaptation, but information on the nature of changes in the most important hemodynamic indices under the influence of these conditions for the time being is limited and no definite opinion has yet been formed concerning the direction of changes in cardiac ejection during the initial period of

COLEJ



USSR

UDC: 621.396.6.002:658.5

POMIKHIN, N. P.

"Basic Factors in Improving Labor Productivity and the Effectiveness of Production of Radio Components on Automatic Continuous-Flow Production Lines"

Elektron. tekhnika. Nauchno-tekhn. sb. Tekhnol. i organiz. proiz-va (Electronic Technology. Scientific and Technical Collection. Technology and Organization of Production), 1970, vyp. 4 (36), pp 90-93 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12V332)

Translation: The advisability of using continuous-flow production lines in making radio components is substantiated with regard to Soviet and non-Soviet experience. The specifics of producing these components are pointed out. On the basis of analysis of a formula for the productivity of social labor, the basic factors are established which determine selection of the version of line construction. Resumé.

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USSR

UDC: 621.317.335.3

DVINSKIKH, V. A., POMINOV, M. V.

"Measurement of the Parameters of Dielectrics on Superhigh Frequencies in a Self-Excited Oscillator Circuit"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 1 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 1), Novosibirsk, 1970, pp 90-91 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1A356)

Translation: The relationship between changes in phase and frequency in a self-excited oscillator may be used for measuring the parameters of dielectrics. A schematic diagram of the measurement device is given. A closed self-excited oscillatory system is formed by a wide-band SHF amplifier, phase shifter, measurement cavity and variable attenuator; there is an oscillator which can be used for accelerating-electrode modulation of the amplifier. Changes in the frequency of self-excited oscillations are indicated by a frequency detector with a meter connected to the output. When the dielectric to be studied is placed in the resonator, there is a change in  $Q$  and resonant frequency. The resultant changes in the mode of the system are indicated. These changes may be used in conjunctions with relations

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USSR

DVINSKIKH, V. A., POMINOV, M. V., Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 1, Novosibirsk, 1970, pp 90-91

given by the method of small perturbations to derive formulas for determining the parameters of the dielectric. The order of measurement is indicated. In view of its high sensitivity, the circuit may be used for measuring the permittivity of gases. Bibliography of three titles. E. L.

2/2

USSR

UDC: 621.317.373

DVINSKIKH, V. A., POZINOV, M. V.

"A Self-Excited Oscillator Circuit for Measuring the Phase Characteristics of SHF Amplifiers"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 2 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 2), Novosibirsk, 1970, pp 85-86 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A330)

Translation: In practical testing of SHF amplifiers, self-excited oscillator circuits are used which have the advantage of simplicity and high sensitivity. A schematic diagram of a self-excited measurement oscillator is given. Any change in the phase displacement of the amplifier leads to a displacement in the frequency of the oscillations, which is determined by a frequency deviation meter or by a wave meter. The change in the phase displacement of the amplifier may be calculated from the measured value of the frequency shift for a known slope of the phase-frequency characteristic of the self-excited oscillator. The sensitivity of the system is determined by the potentialities of the frequency deviation meter and the wave meter, and amounts to  $0.5-1^{\circ}$ . The phase displacement may also be determined by

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USSR

DVINSKIKH, V. A., POMINOV, M. V., Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 2, Novosibirsk, 1970, pp 85-86

using the phase displacement of a phase shifter to compensate. Under certain conditions, this method may give a sensitivity of up to thousandths of a degree. Bibliography of four titles. E. L.

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USSR  
Aerosols

USSR

UDC 541.182.2/.3:537.228

PODOL'SKIY, A. A., TURUBAROV, V. I., and POMINOV, YE. I., Kuybyshev Aviation Institute

"Calculation of the Velocity and the Orientation Time of Aerosol Particles in an Electric Field"

Moscow, Kolloidnyy Zhurnal, Vol 35, Vyp 1, 1973, pp 63-68

Abstract: Solutions were obtained for a series of physical problems relating to the charge, flocculation, and electric precipitation of aerosol particles. This was accomplished by analyzing the motion of nonspherical particles during their orientation in a high-voltage electrostatic field and determining the velocity and orientation time as a function of the field strength and particle parameters. At high field voltages the orientation time is significantly shorter than the time required to charge the particle; therefore, the former may be neglected in investigations dealing with the charging of nonspherical particles. Equations and graphs show the influence of particle parameters on its behavior.

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Epidemiology

USSR

UDC 619:616.981.51

TSURKAN, M. A., and POMIRKO, T. I., Veterinary Administration, Ministry of Agriculture, Moldavian SSR

"Natural Foci of Anthrax"

Moscow, Veterinariya, No 10, Oct 70, pp 57-58

Abstract: Anthrax has long been a common disease among cattle in the Moldavian SSR. Although the veterinary service is very active, many cases are still reported annually. The spread of the anthrax pathogen from previously infected areas and the appearance of new foci are due largely to the presence of humus-rich chernozem, the abundance of precipitation, and high temperatures. Some 64% of all cases of the disease in the republic occur in the northern forest-steppe zone, which occupies 44% of the total area. The predominant soil is chernozem, with some dark-gray forest soils. The central forest zone, which makes up 18% of the total area, is the site of about 8% of the cases. Gray and brown forest soils predominate along with some leached chernozem. The fewest cases of anthrax (26%) are reported in the southern and southeastern steppe zone, which embraces 40% of the total area. Ordinary, calcareous, and southern chernozem are the main soils in this zone.

1/1

1/2 012 UNCLASSIFIED PROCESSING DATE--20NOV  
TITLE--RESTORATION OF THE RCUF OF THE ELECTRIC FURNACE USED FOR MELTING  
SILICON CONTAINING FERRCALLOY -U-  
AUTHOR--(04)-KYSS, M.A., GETMANCHUK, V.M., BEDOV, I.S., POMOGAYEV, V.N.  
COUNTRY OF INFO--USSR  
SOURCE--U.S.S.R. 263,638  
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRATSY, TOVARNYE ZNAKI 1970, 47(8)  
DATE PUBLISHED--10FE870  
SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, MATERIALS  
TOPIC TAGS--CHEMICAL PATENT, ELECTRIC FURNACE, SILICON ALLOY, IRON ALLOY,  
REFRACTORY MATERIAL, MAGNESIUM COMPOUND  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3004/1820 STEP NO--UR/0482/70/000/000/0000/0000  
CIRC ACCESSION NO--AA0132085  
UNCLASSIFIED



2/2 012

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AA0132085

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ELEC. FURNACE CROWN IS REDUCED BY APPLYING MG CNTG. MATERIALS TO THE MOLDING SURFACE OF THE CROWN. THE CROWN IS THEN TREATED WITH THE MG VAPORS THAT RESULT FROM REDN. OF THE MG RAW MATERIAL. THE VAPORS ARE INTRODUCED IN A QUANTITY DEPENDING ON THE WEAR AND TEAR OF THE CROWN. FACILITY: CHELYABINSKIY ELEKTROMETALLURGICHESKIY KOMBINAT.

UNCLASSIFIED

1/2 023 - UNCLASSIFIED PROCESSING DATE--02OCT70  
TITLE--PROPERTIES OF FILLED POLY(VINYL CHLORIDE) -U-  
AUTHOR--(03)-POMOGAYLO, A.D., KESTELMAN, N.YA., SHAPOVALOV, YU.I.  
COUNTRY OF INFO--USSR  
SOURCE--MEKH. POLIM. 1970, 6(1), 124-6 P  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--POLYVINYL CHLORIDE, HARDNESS, TITANIUM DIOXIDE, FILLER, SILICA  
GEL, CARBON PRODUCT, MOISTURE MEASUREMENT, PLASTIC MECHANICAL PROPERTY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1989/0813 STEP NO--UR/0374/70/006/001/0124/0126  
CIRC ACCESSION NO--AP0107355  
UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0107355

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. HARDNESS AND RIGIDITY OF POLY(VINYL CHLORIDE) (I) SAMPLES FILLED WITH TIO SUB2 POWD. SILICA GEL, AND ACETYLENE BLACK INCREASE WITH INCREASING AT. RADIUS OF THE FILLER CENTRAL ATOM, I.E. TI LARGER THAN SI LARGER THAN C. TIO SUB2 FILLED SAMPLES HAD LOWER ABRASION RESISTANCE THAN THOSE FILLED WITH SIO SUB2 OR C. THERMOPROCESSING I FILLED WITH C DID NOT SIGNIFICANTLY INFLUENCE THE AMT. OF ABRASION, BUT WEAR SHARPLY INCREASED FOR SAMPLES FILLED WITH SIO SUB2 AFTER THERMOPROCESSING IN OIL AND IN WATER. MOISTURE ABSORPTION WAS GREATEST FOR SAMPLES FILLED WITH TIO SUB2 AND LEAST FOR THOSE FILLED WITH SIO SUB2.

UNCLASSIFIED

1/2 014 UNCLASSIFIED PROCESSING DATE--02OCT70  
TITLE--INFLUENCE OF VARIOUS FACTORS ON THE CRYSTALLIZATION AND DEGREE OF  
DISPERSION OF A COPPER POWDER OBTAINED BY REDUCTION -U-  
AUTHOR--(02)--KUTOVSKAYA, N.L., POMOSOV, A.V.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(3), 548-53  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR  
TOPIC TAGS--COPPER POWDER, CRYSTALLIZATION, METAL REDUCTION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1993/0283 STEP NO--UR/0080/70/043/003/0548/0553  
CIRC ACCESSION NO--AP0113213  
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0113213

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FACTORS DETG. THE STATE OF CU POWDER FORMED IN THE REDN. OF CUSO SUB4 WITH TI SUB2 (SO SUB4) SUB3 WERE INVESTIGATED BY USING POTENTIOMETRIC, SEDIMENTOMETRIC, AND MICROPHOTOGRAPHIC METHODS. THUS, THE CHANGE OF THE POTENTIAL OF A PT ELECTRODE, IMMERSSED IN THE SOLV. OF THE REDUCING AGENT. TI SUB2 NEGATIVE (SO SUB4) SUB3 WHEN AN EQUIV. AMT. OF CUSO SUB4 WAS ADDED, WAS RECORDED OSCILLOGRAPHICALLY; THE CURVE REFLECTED THE KINETICS OF THE PROGRESS. THE POTENTIAL OF THE PT ELECTRODE BECAME IDENTICAL TO A CU PRIME2 POSITIVE-CU ELECTRODE (0.28-0.3 V). THE DATA AFFORDED AN ESTN. OF THE DURATION OF CRYSTAL NUCLEI FORMATION. THE INFLUENCE OF THE CONCN. OF CUSO SUB4, (0.5-12 G CU-1.), TEMP. (5-60DEGRFES), AND INTENSITY OF STIRRING WERE STUDIED. HIGHER CONCN. OF CUSO SUB4 RESULTS IN INCREASED DIFFUSION RATE CAUSED BY A GREATER CONCN. GRADIENT AND CRYSTAL GROWTH OF CU OCCURS FASTER. THE DURATION OF THE REDN. PROCESS IN SOLNS. CONTG. 8-12 G CU-1. IS ONE-HALF THAT IN SOLNS. CONTG 0.5-4 G CU-1. THE TIME REQUIRED TO COVER THE PT ELECTRODE WITH CU DECREASES FROM 0.06 SEC IN SOLNS. CONTG 0.5 G CU-1. TO 0.04 SEC IN SOLNS. CONTG. 12 G CU-1. FACILITY: URAL. POLITEKH. INST. IM. KOROVA, SVERDLOVSK, USSR.

UNCLASSIFIED

USSR

UDC 612.273-014.33-015.33

MEYERSON, F. Z., POMOYNIITSKIY, V. D., and YAMPOL'SKAYA, B. A., Institute of Normal and Pathological Physiology, Academy of Medical Sciences USSR, Moscow

"Role of the Biogenesis of Mitochondria in the Adaptation of the Organism to Altitude Hypoxia"

Moscow, Doklady Akademii Nauk SSSR, Vol 203, No 4, 1972, pp 973-976

Abstract: A study was conducted of the synthesis of DNA, RNA, and protein in mitochondria and nucleic of the myocardium in rats subjected to intermittent hypoxia produced by placing the animals for 6 hrs per day during 40 days into a chamber with a pressure corresponding to an elevation of 7,000 m.  $^3\text{H}$ -Thymidine,  $^{14}\text{C}$ -orotic acid,  $^{14}\text{C}$ -lysine,  $^{14}\text{C}$ -alanine, and  $^{14}\text{C}$ -methionine were applied in studies of the biosynthesis. These compounds were injected intraperitoneally to the animals. As a result of adaptation to hypoxia, the rate of synthesis of DNA, RNA, and protein (as indicated by the incorporation of thymidine, orotic acid, and the amino acids, respectively) in mitochondria and of RNA and protein in cell nuclei increased. Activation of the synthesis of these substances was also observed after stressing of the organism by exposure to cold and as a result of physical effort; it is due in every instance to a shortage of macroergic substances, specifically

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USSR

MEYERSON, F. Z., et al., Doklady Akademii Nauk SSSRm Vol 203, No 4, 1972, pp 973-976

ATP. Offsetting of this shortage always takes place by activation of the biogenesis of mitochondria and an increase in apparatus of mitochondria involving accelerated synthesis in them of DNA that forms genetic matrices arises in response to a deficiency of energy and constitutes a general mechanism of long-range adaptation of the organism to the environment. (Submitted by Academician V. V. Parin, 4 Apr 71)

2/2

- 48 -

Reliability Theory

USSR

UDC: 621.396.6.002:658.5

POMUKHTIN, N. B., SKUDARNOV, M. Ye., KUZ'MIN, G. M., CHERNYAVSKIY, Yu. M.,  
POKROVSKIY, V. P.

"A Data Collection and Processing System for Operational Control of Radio  
Component Production Lines"

Elektron. tekhnika. Nauchno-tekhn. sb. Tekhnol. i organiz. proiz-va (Elec-  
tronic Technology. Scientific and Technical Collection. Technology and Or-  
ganization of Production), 1970, vyp. 4 (36), pp 94-101 (from RZh-Radio-  
tekhnika, No 12, Dec 70, Abstract No 12V331)

Translation: The system makes it possible to monitor the operation of  
equipment, to take account of the number of good and rejected articles,  
to check their quality, to check on the course of technological processes,  
to give a light-panel display on the course of plan fulfilment, and to  
collect statistical data on operation of the line with electric typewriter  
printout. Resumé.

1/1



USSR

UDC: 621.396.69:621.316.826

AFANAS'YEV, B. K., VOL'FSON, I. B., KARACHENTSEV, A. Ya., PEL'TSMAN, I. D.,  
POMUKHIN, N. P., CHERNYAVSKIY, Yu. M.

"Experience in Developing an Automated Production Line for SN1-1-1 Varistors"

Elektron. tekhnika. Nauchno-tekhn. sb. Tekhnol. i organiz. proiz-va (Elec-  
tronic Technology. Scientific and Technical Collection. Technology and Or-  
ganization of Production), 1970, vyp. 4 (36), pp 3-10 (from RZh-Radiotekh-  
nika, No 12, Dec 70, Abstract No 12V412)

Translation: The authors describe a line which excels the level of the  
best known models in its technological characteristics, level of automation  
and the number of operations performed. The principle of unification was  
extensively utilized in designing the line. The line is equipped with a  
system for accumulating and processing data on the course of the techno-  
logical process. Resumé.

Miscellaneous

USSR

UDC 669.782.018.9(088.8)

GUSAROV, V. N., MIKULINSKIY, A. S., RYSS, M. A., GETMANCHUK, V. M.  
PIGASOV, S. Ye., BELYAYEV, G. S., BEDOV, I. S., and FOMOVGAYEV, V. N.

"Method of Melting Calcium-Silicon"

USSR Author's Certificate No. 26515, Filed 22/04/67, Published 17/06/70,  
(Translated from Referativnyy Zhurnal-Metallurgiya, No. 1, 1971, Abstract  
No.1 G164 P).

Translation: A method is suggested for producing Ca-Si in an electric  
arc furnace by reducing CaO with Si-containing material in the presence  
of  $\text{CaF}_2$  with creation of a reducing atmosphere in the furnace by adding  
a C-containing material to the fused charge during the period of Ca  
reduction. The charge is fused in the presence of the C-containing  
material in order to increase the content of Ca in the melt, while the  
Si-containing reducer is introduced after melting.

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USSR

UDC: 681.2.087.92-932

VYZHELEVSKIY, B. V., ~~ROMYKAYEV, I. I.~~ VLASOV, Ye. N., UVAKIN, V. F.,  
GOL'DENBERG, F. M., KARCHEVSKIY, A. A., ZELENKOV, S. V.

"A Sine-Cosine Converter"

USSR Author's Certificate No 316110, filed 24 Apr 70, published 9 Nov 71  
(from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 7,  
Jul 72, Abstract No 7A111 P)

Translation: A patent has been granted for a sine-cosine converter distinguished by the fact that one end of each output winding of the rotor is connected to the input of an auxiliary phase-sensitive rectifier, while the other end is connected through a resistor to the input and output of the same rectifier. Laid around the perimeter of the back edge of the rotor is an excitation winding which is connected to a source of alternating current. The device acts as a vector plotter and coordinate transformer with DC and AC input signals. Either DC or AC output signals may be obtained as desired. The device can serve two servosystems simultaneously, one working on AC and the other on DC. Two illustrations.  
O. S.

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AA0039788- Ponamarev, V.D.

UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent, <sup>4</sup>3-70.

236766 SMEETING OF ORES, CONCENTRATES AND WASTE  
PRODUCTS from production of non-ferrous  
metals in shaft furnaces, is modified by feeding  
hot metal gases previously mixed with cold or hot  
air or oxygen-enriched air through nozzles or bur-  
ners situated above the level of the tuyeres. This  
enables the costs of the process to be reduced  
and production capacity of the furnace to be in-  
creased. 1.2.64. as 881159/22-2. Yu.A. AGAPOV et al.  
Chimkent Sec. M.I. Kalinin Lead Works, Non-  
Ferrous Metals Res. Inst. and Metallurgy & Ore  
Enrichment Inst. Acad. Sciences Kazakh SSR.  
(10.6.69.) Bul. 7/3.2.69. Class 40a. Int. Cl. C22b.

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19741100

AA0039788

AUTHORS: Agapov, Yu. A.; Gayvoronskiy, A. G.; Yevdokimenko, A. I.; Yelyakov,  
I. I.; Kovgan, P. A.; Malkin, Ya. Z.; Polyvyanny, I. R.;  
Ponamarev, V. D.

Chimkentskiy Ordena Lenina Svintsovy Zavod imeni M. I. Kalinina, Gosudarstvennyy  
Nauchno-Issledovatel'skiy Institut Tsvetnykh Metallov i Institut Metallurgii  
i Obogashcheniya AN Kazakhskoy SSR

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19741101

USSR

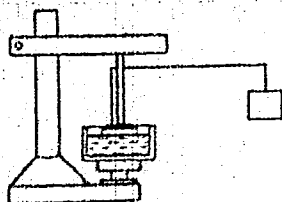
UDC: 531.715.2 531.717.53

SHATALOV, V. F., KOPYTIN, A. M., PONARIN, N. S., KOMISSAROV, V. T.

"A Method of Determining the Extent of a Destroyed Layer in Semiconductor Plates"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 7, Mar 72, Author's Certificate No 329374, Division G, filed 7 Apr 70, published 9 Feb 72, p 151

Translation: This Author's Certificate introduces a method of determining the extent of a destroyed layer in semiconductor plates. The procedure consists in etching the surface of the plate in an electrolyte and measuring the parameters of plates. As a distinguishing feature of the patent, the method is designed for increased inspection productivity. A strain gauge is used for determining the greatest deformation of the plate during the etching process.



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1/2 . 034 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--THERMOEMF. AND THERMAL CONDUCTIVITY OF BISMUTH AND ANTIMONY ALLOYS  
DOPED WITH TELLURIUM -U-  
AUTHOR--(03)-GRABOV, V.M., IVANOV, G.A., PONARYADOV, V.S.  
COUNTRY OF INFO--USSR  
SOURCE--FIZ. TVERO. TELA 1970, 12(1), 267-72  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS, PHYSICS  
TOPIC TAGS--CRYSTAL LATTICE STRUCTURE, THERMAL CONDUCTIVITY, BISMUTH  
ALLOY, ANTIMONY ALLOY, TELLURIUM, METAL COATING, CRYSTAL IMPURITY,  
ELECTROMOTIVE FORCE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REF/FRAME--1980/0252 STEP NO--UR/0181/70/012/001/0267/0272  
CIPC ACCESSION NO--AP0048531  
UNCLASSIFIED

PROCESSING DATE--18SEP70

UNCLASSIFIED

2/2 034

CIRC ACCESSION NO--AP0048531

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. LATTICE THERMAL COND., H SUB11  
PRIME1 AND H SUB33 PRIME1, WAS DETD. FOR HOMOGENEOUS SINGLE CRYSTAL  
SOLID SOLNS. OF BI-SB AT 100DEGREEK WITH 5, 8, 12, 20, AND 30 AT.  
PERCENT SB BY EXTRAPOLATION OF LATTICE THERMAL COND. OF ALLOYS DOPED  
WITH TE TO ZERO CONTENT OF TE. ELECTRONIC THERMAL COND. AS A RESULT OF  
A STRONG DEGENERACY WAS CALCD. WITH THE AID OF THE WIEDEMANN FRANTZ LAW,  
USING THE CLASSICAL VALUE OF THE LORENTZ NO. TE IMPURITY, VARYING  
ELECTRON CONCN. CONSIDERABLY, AFFECTS THE THERMAL PROPERTIES OF THE  
LATTICE ONLY WEAKLY, SO THAT LATTICE COND. OF DOPED AND PURE SOLID  
SOLNS. PRACTICALLY COINCIDE. LATTICE THERMAL COND. OF THE SOLID SOLNS.  
IS SATISFACTORILY DESCRIBED BY THE THEORY OF KLEMENS WITH THE ACCOUNT OF  
N PROCESSES OF SCATTERING, WHEN IT IS ASSUMED THAT THE RATIO OF THE  
RATES OF NORMAL PROCESSES TO THOSE OF FLOPOVER PROCESSES IS 4. AT  
90-300DEGREEK, SMALL AND ANISOTROPIC VALUES OF THERMAL EMF. ARE OBSD.  
WHICH ARE EXPLAINED WHEN A HIGHER LYING BAND OF ELECTRONS IS CONSIDERED.  
FOR ADDNL. BANDS THE QUADRATIC DISPERSION LAW IS TRUE, AND SIGMA SUB11  
CONGRUENT TO 4 SIGMA SUB33. THE MAIN BAND IS NONPARABOLIC. SCATTERING  
TAKES PLACE ON ACOUSTICAL PHONONS.

UNCLASSIFIED



1/2 023 UNCLASSIFIED PROCESSING DATE--3000170  
TITLE--MOSSBAUER EFFECT AT IMPURITY NUCLEI OF PRIME119 TIN IN MERCURY AND  
IN THE ALPHA PHASES OF SILVER, CADMIUM AND SILVER, ZINC ALLOYS: INTERNAL  
AUTHOR--(03)--CHEKIN, V.V., NAUMOV, V.G., PONASHKIN, L.I.

COUNTRY OF INFO--USSR

SOURCE--FIZIKA METALLOV I METALLOVEDENIE, MAR. 1970, 29, (3), 524-529

DATE PUBLISHED--70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--MOSSBAUER EFFECT, TIN ISOTOPE, MERCURY, ALPHA PHASE, SILVER  
BASE ALLOY, METAL OXIDATION, ZINC CONTAINING ALLOY, CADMIUM CONTAINING  
ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3003/0452

STEP NO--UR/0126/70/029/003/0524/0529

CIRC ACCESSION NO--AP0129677

UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0129677

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. THE MOSSBAUER PROBABILITY AND THE ISOMERIC SHIFT ASSOCIATED WITH PRIME119 SN IMPURITY NUCLEI IN THE ALPHA PHASES OF THE AG-CD AND AG-ZN SYSTEMS WERE STUDIED. IN CONTRAST TO EXISTING VIEWS, THERE WAS NO MARKED CORRELATION BETWEEN THE ISOMERIC SHIFT AND THE M. PROBABILITY IN ALLOYS OF DIFFERENT COMPOSITIONS. THIS LACK OF AGREEMENT IS TENTATIVELY EXPLAINED BY MEANS OF A MODEL ACCORDING TO WHICH THE PROBABILITY IS DETERMINED BY THE VALENCE ELECTRONS OF THE IMPURITY ATOMS WHILE THE ISOMERIC SHIFT IS INSENSITIVE TO THE CONDUCTION BAND CHARACTERISTICS. A POSSIBLE APPLICATION OF THESE EFFECTS TO THE STUDY OF INTERNAL OXIDATION IN ALLOYS IS CONSIDERED.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--02OCT70  
TITLE--PRODUCTION OF SEMI KILLED STEEL -U-  
AUTHOR--(03)-PONER, D.M., BEREZINETS, V.YA., KORNEYEV, N.D.  
COUNTRY OF INFO--USSR *P*  
SOURCE--METALLURG. JAN. 1970, (1), 19-20  
DATE PUBLISHED----JAN70  
  
SUBJECT AREAS--MATERIALS  
  
TOPIC TAGS--KILLED STEEL, STEEL PRODUCTION, STEEL DEOXIDATION,  
FERROSILICON, ALUMINUM, STEEL SHEET, IMPACT STRENGTH  
  
CONTROL MARKING--NO RESTRICTIONS  
  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1989/1943 STEP NO--UR/0130/70/000/001/0019/0020  
  
CIRC ACCLSSION NO--AP0108272

UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0108272

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IMPROVEMENTS TO THE PRODUCTION OF SEMI KILLED STEEL ARE DESCRIBED. STEEL FOR USE AS THICK SHEET IS DEOXIDIZED WITH AL POWDER; OTHER TYPES ARE TREATED WITH FERRO-SI IN THE LADLE. THE MECHANICAL PROPERTIES OF THIS MATERIAL SATISFY STATE STANDARDS EXCEPT FOR CASES INVOLVING A VERY HIGH IMPACT STRENGTH AT LOW TEMP. AFTER MECHANICAL AGEING. THE USE OF SEMI KILLED INSTEAD OF KILLED STEEL IMPROVES THE PRODUCTIVITY OF THICK SHEET.

UNCLASSIFIED

USSR

UDC: 546.655+547.466+541.49

ROGOZINA, E. M., POPOV, D. K., and PONIKAROVA, T. M.

"A Study of the Interaction of Radio Isotopes of Rare Earth Elements With Proteins and Amino Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 40 (102), No 11, Nov 70, pp 2466-2469

Abstract: The stability of histidine complexes with yttrium and cerium indicates that this amino acid takes an active part in the transfer and accumulation of radioactive isotopes in an organism. To confirm this hypothesis, an experiment was conducted in which a rat was given an intraveinuous injection of an aqueous solution of a histidine complex with yttrium-90, and another rat was injected with an aqueous solution of yttrium chloride. The amount of Y-90 in the organs of the rat injected with the histidine complex was generally 3-5 times greater than in the animal injected with the chloride solution. The resultant data confirm the hypothesis on the active participation of amino acids in the transfer of trace elements by the blood when the element forms a complex compound with an amino acid which is not broken down by chemical conversions in the organism. The ion exchange method with an isotopic tag was

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USSR

ROGOZINA, E. M., et al, Zhurnal Obshchey Khimii, Vol 40 (102), No 11, Nov 70, pp 2466-2469

used for studying enzyme - trace element systems. Pepsin and trypsin were the enzymes studied. It was found that yttrium does not form complexes with these proteins in the acid region. Noticeable binding of yttrium with the enzymes begins at pH 5-6. At a pH of 6-7, both pepsin and trypsin form water-soluble complexes. Maximum yttrium binding is observed at a pH of 7-9. In the case of pepsin, nearly 70% of the yttrium forms complexes with the enzyme.

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USSR

UDC 595.771

PONIROVSKIY, YE. N., Ashkhabad Institute of Epidemiology and Hygiene, Ashkhabad

"Sandflies (Phlebotomidae) of the Sumbar Valley; Their Epizootiological and Epidemiological Significance"

Leningrad, Parazitologiya, Vol 5, No 6, Nov/Dec 71, pp 495-498

Abstract: The epizootiological and epidemiological significance of some species of sandflies in the Sumbar Valley of Southwestern Kopet Dag, Turkmenistan, was studied. The sandfly fauna in the Sumbar Valley comprises 13 species. The species composition of sandflies in human habitations and in the vicinity of colonies of the great gerbil (*Rhombomys opimus*), burrows of porcupines, and caves inhabited by porcupines was determined. The presence of a large number of Caspian geckoes in the habitations of porcupines was observed. The pathogenicity of the species of flagellates isolated from the sandflies and the aggressiveness of the sandflies towards human beings and Caspian geckoes were determined. It was established that *Phlebotomus monogolensis*, which attacks humans more frequently than other species of sandflies in the vicinity of great gerbil colonies, and which carries a species of flagellates pathogenic to white mice, presumably plays the most significant role in transmitting leishmaniasis in the Upper Sumbar. *Sergentomyia arpaklensis*, however, is 1/2"

USSR

PONIROVSKIY, YE. N., Parazitologiya, Vol 5, No 6, Nov/Dec 71, pp 495-498

essentially a transmitter of flagellate infections to reptiles. It is possible that *Ph. chinensis* and *Ph. major* function as vectors or the agent of visceral leishmaniasis in the Upper Sumbar.

2/2



USSR

UDC: 621.791.756

YUSHCHENKO, K.A., PONIZOVITSEV, A.M., FOMIN, V.V., POBOL', A.A., and SERDYUK, M.A.

"Increase in Electroslag Welding Efficiency"

Kiev, Avtomaticheskaya Svarka, No 5, May 70, pp 72-73

Abstract: A technique was described for increasing electroslag welding efficiency. Experiments were conducted on an A-535 commercial device with a modified neck. The electrode was preheated from a self-contained DC source. Heating was regulated by changing the current value of the source by lowering or increasing the resistance between the contacts of this current supply. The best results were attained by heating the wire to a temperature close to the melting point. In the experiments, 3-mm-diameter O6Kh19N9T welding wire and ANF-14 flux were used to weld plates made of Kh18N10T and Kh17N13M3T steels. The following advantages were established for electroslag welding with preheated electrode: the time for the transition from the arc process to the slag process is shortened considerably; the electrode wire melts in the upper part of the slag bath, even at a high feed rate; the volume of the slag bath can be decreased sharply without disturbing the stability of the process and worsening the seam-forming conditions; welding current can be reduced by 25-30%; and welding efficiency rises 1.5-2.0 times. Mechanical tests of the seam metal showed its high quality. A considerable rise can be expected in electroslag process efficiency upon complementary preheating of the electrode in arc

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YUSECHENKO, K.A., et al, Avtomaticheskaya Svarka, No 5, May 70, pp 72-73

welding with forced forming under flux or in shielding gas, in welding with wire made of powdered material, and in electroslog or arc plasma remelting.

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USSR

UDC 681.325.07

BRIGADINOV, V. A., KOROBV, N. N., RON'KIN, V. A.

"A Device for Measuring the Mean-Square Value of a Stationary Centered Random Process"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratztsy, Tovarnyye Znaki, No 9, 1970, p 133, Patent No 264798, filed 16 Aug 68

Abstract: This Author's Certificate introduces a device for measuring the mean-square value of a stationary centered random process. The device contains an input unit, integrator, and registration and comparison units. As a distinguishing feature of the patent, measurement precision is improved by connecting between the input unit and the integrator a comparison unit and an amplifier with variable gain which changes by a linear law.

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USSR

UDC 669.14.018.44:534-8

PON'KIN, YU. F., VOLKOV, B. I., KUDRYAKOVA, L. P., MINTS, I. I.,  
and KUZNETSOVA, G. V.

"Effect of Ultrasonic Vibrations on Mechanical Properties and  
Fine Structure of 12Kh1MF Steel"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 8,  
1971, pp 67-68

Abstract: A study was made of the aging of 12Kh1MF steel (0.11% C, 0.20% Si, 0.46% Mn, 1.12% Cr, 0.20% Ni, 0.27% Mo, 0.22% V) under the action of ultrasonic vibrations. Billets were normalized at 980° C and tempered at 740° C. Ultrasound-induced changes in properties were compared with changes in the same properties as a result of thermal aging without stress. A comparison was made of fine structure, short-time mechanical properties, the content of carbide-forming elements (chromium, molybdenum, vanadium) in the anode deposit and the time until failure

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PON'KIN, YU. F., et al., Metallovedeniye i Termicheskaya Obrabotka Metallov, No 8, 1971, pp 67-68

at  $\sigma = 16 \text{ kg/mm}^2$  and  $585^\circ\text{C}$ . The results indicate that the processes occurring in 12Kh1MF steel as a result of the action of 20 kHz ultrasonic vibrations correspond to the processes taking place during thermal aging without stress, but that they occur at a much more rapid rate. Ultrasonic vibrations with a certain peak pressure can be used for accelerated long-time strength testing of 12Kh1MF-type steels.

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USSR

UDC 669.15'26-194:620.172-436

PONIZOVSKIY, V. M., VORONTSOV, I. I., and VORONISOVA, S. A., Perm State  
University imeni Gor'kiy

"Tensile Testing Steel ShKh15P Steel Balls by the Method of Large Centrifugal  
Fields"

Moscow, Zavodskaya Laboratoriya, No 10, Oct 72, pp 1270-1271

Abstract: Balls of steel ShKh15P (and ShKh15VD) with diameters of 1.00 to 3.50 mm were tensile tested by magnetically suspending them in an evacuated glass chamber of an ultracentrifuge and spinning them on their axis by a rotating magnetic field until failure. Results of the tests showed that the larger the diameter the quicker the ball was to fail, i.e., a 1-mm diameter ball could sustain 301-303 thousand revolutions per second before failure while the 3.49-mm ball failed upon reaching 83-86 thousand revolutions per second. The average peripheral velocity of the balls tested was 979 m/sec. 1 table, 4 bibliographic references.

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- 41 -

Acc. Nr.

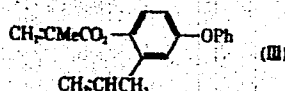
AP0100237

Abstracting Service:  
CHEMICAL ABST.

Ref. Code

UR0062

11184j. New mono- and difunctional monomers for polymerization. Frunze, T. M.; Sakharova, A. A.; Lyubinskaya, R. A.; Ponkratova, T. M. (Inst. Elementoorg. Soedin. Moscow, USSR). *Izv. Akad. Nauk SSSR, Ser. Khim.* 1970, (1), 182-3 (Russ). The condensation of 4-PhOC<sub>6</sub>H<sub>4</sub>OH with CH<sub>2</sub>:CHCH<sub>2</sub>Br in acetone contg. K<sub>2</sub>CO<sub>3</sub> gave 80% 4-PhOC<sub>6</sub>H<sub>4</sub>OCH<sub>2</sub>CH:CH<sub>2</sub> (I), b<sub>p</sub> 163-5°. Claisen rearrangement of I at 220° gave 75% 4,3-HO(CH<sub>2</sub>:CHCH<sub>2</sub>)C<sub>6</sub>H<sub>4</sub>OPh (II), b<sub>p</sub> 185-8°. Esterification of II



with H<sub>3</sub>C:CMcCOCl in NaOH soln. gave 70% III, d<sub>4</sub><sup>20</sup> 1.1069, n<sub>D</sub><sup>20</sup> 1.5484.

CPJR

REEL/FRAME  
19841627

706

1/2 018 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--DEPENDENCE OF THE ALPHA PHOSPHORESCENCE SPECTRA FOR ACRIDINE DYES  
ON ACTIVATOR CONCENTRATION -U-  
AUTHOR-(03)-PONOCHOVNYI, V.I., LYSENKO, G.M., KISLYAK, G.M.  
COUNTRY OF INFO--USSR  
SOURCE--UKR. FIZ. ZH. 1970, 15(1), 158-60  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS, MATERIALS  
TOPIC TAGS--PHOSPHORESCENCE, SPECTRUM, ACRIDINE, DYE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1984/1711 STEP NO--UR/0185/70/015/001/0158/0160  
CIRC ACCESSION NO--AP0100308  
UNCLASSIFIED



2/2 018

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0100308

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PHOSPHORESCENCE SPECTRA OF ACRIDINE YELLOW WAS MEASURED FOR SAMPLES OF EQUAL CONCN. BUT OF DIFFERENT THICKNESS AND EXCITED AT 90DEGRESS ANGLE AND THROUGHOUT THE SAMPLE (KAPPA., ET AL., 1966). THE RESULTS INDICATE THAT THE CHANGES IN PHOSPHORESCENCE SPECTRA ARE DUE TO THE CHANGE IN CONCN. OF THE ACTIVATOR PI SYSTEM OF MOL.'

UNCLASSIFIED

Acc. Nr:

AP0045143

Abstracting Service:

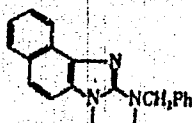
CHEMICAL ABST

4170

Ref. Code:

UR0409

90370j Synthesis of 2,3-dihydro derivatives of imidazo[1,2-a]imidazole systems. Kochergin, P. M.; Povstvanov, M. V.; Priimenko, B. A.; Bonomar, V. S. (Vses. Nauch.-Issled. Khim.-Farm. Inst. - im. Ordzhonikidze, Moscow, USSR). *Khim. Geterotsikl. Soedin.* 1970, (1), 129 (Russ). Reaction of 2-haloimidazoles with halogenated alcs., olefin oxides, and 1,2-dihaloalkanes in an alk. medium gave the following: 1-(2-hydroxyethyl)-2-bromo-4,5-diphenylimidazole m. 165-6°; 2-chloro analog, m. 138-9°; 2-chloro-3-(2-hydroxyethyl)naphth[1,2-d]imidazole m. 186-7°. These heated with  $NH_3$  or  $RNH_2$  gave: 1-(2-hydroxyethyl)-2-phenylamino-4,5-diphenylimidazole, m. 219-20°; 2-benzylamino-3-(2-hydroxyethyl)naphth[1,2-d]imidazole, m. 173-5°, which with  $SOCl_2$  gave: 1,5,6-triphenyl-2,3-dihydroimidazo[1,2-a]imidazole, m. 199-200°; 2,3-dihydroim-



idazo[1,2-a]benzimidazole (picrate, m. 180-2°); 1-benzyl-2,3-dihydroimidazo[3,2-b]naphth[1,2-d]imidazole. m. 186-7° (I). Similarly were prepd. 1-(2-bromoethyl)-2-bromo-4,5-diphenylimidazole, m. 147-8°; and 2-chloro-3-(2-bromoethyl)naphth[1,2-d]imidazole, m. 106-7°.

G. M. Kosolapoff

REEL/FRAME

19780043

PONOMAR', Ye. K.

IN THE PRESIDUM OF THE USSR ACADEMY OF MEDICAL SCIENCES

(Article by Ye. K. Ponomar' (Moscow); Moscow, Vsesoyuznyi Nauchnyi Tsentr Meditsinskikh Nauk SSSR, hereditary no 4, 1972, pp 95-96)

The presidium of the USSR ANS [Academy of Medical Sciences] heard and discussed a report by the director of the Institute of Medical Genetics, USSR Acad. S.P. Lodyagin, on the prospects of development of research at this Institute, and considered its structure. The presidium observed that success in general and molecular genetics in the last few years helped gain understanding of the etiology and pathogenesis of many hereditary diseases, as well as better identification, treatment, and prophylaxis thereof. This promoted medical genetics to one of the first places in theoretical and practical medicine. Clinical genetics is being developed intensively in neuropathology, psychiatry, pediatrics, therapy, ophthalmology, dermatology, and endocrinology.

In the last ten years the hereditary etiology of many diseases has been revealed: chromosomal, metabolic, blood, connective tissue diseases and those of other systems. At present we already know of more than 1,500 hereditary diseases. Many new biochemical and cytogenetic methods have been developed to diagnose hereditary diseases, and they have already found a firm place in routine clinical practice; they also permitted differentiation between hereditary and nonhereditary anomalies referable to metabolism, sexual development, diverse forms of chromosomal deviations associated with mental retardation. Effective methods for early detection of hereditary disease are being developed intensively and adopted in practice; methods of intra-uterine diagnosis of hereditary disease are now in use.

Considerable progress has been made with respect to disclosing the pathogenesis of many hereditary diseases, and this was substantially aided not only by the ideas and advances in genetics, but also the use of new biochemical, immunological, cytological, and physiological methods. On this basis, new special diets have been developed for a number of hereditary metabolic diseases, and more extremely effective antigenophilic globulins have been obtained.

PONOMAR, Ye. K.

IN THE PRESIDUM OF THE USSR ACADEMY OF MEDICAL SCIENCES

[Article by Ye.K. Ponomar', (Moscow); Moscow, Vestnik Akademii Meditsinskikh Nauk SSSR, Russian, No 2, 1972, pp 93-95]

JPRS 55569  
29 MAR 73

The Presidium of the USSR AMS (Academy of Medical Sciences) heard the report of A.D. Ado on the status and prospects of scientific research in the USSR on the problem of "Allergy," and the report of the commission for the inspection of the scientific activity of the Allergological Laboratory, USSR AMS.

The Presidium of the USSR AMS noted that the problem commission headed by A.D. Ado is doing much work with regard to analysis of scientific research in the area of allergy in different institutions of the Soviet Union and plans to develop such research in the most promising directions. In addition to the Scientific Research Allergological Laboratory, USSR AMS, the allergy problem is being investigated at the Institute of Experimental Medicine, USSR AMS, in which, under the supervision of V.I. Ioffe and in conjunction with the chair of pathological anatomy of the First Moscow Medical Institute, USSR I.M. Sechenov headed by A.I. Struchkov, a number of general and special issues dealing with allergy are being fruitfully developed. At the Scientific Research Institute of Regional Pathology, Kazakh Ministry of Health, being investigated with success under the guidance of N. D. Bekashev. Extensive studies are in progress of the clinical aspects of allergy in the ear, nose, and throat clinic of the Second Moscow Medical Institute named N.I. Pirogov, under the supervision of N.S. Preobrazhenskaya, in the internal disease clinic of Tbilisi Medical Institute, under the guidance of G.V. Gurgelidze, at the Kiev Institute for Advanced Training of Physicians, and at the Kazan' and Kostov medical institutions. Bacterial and fungal allergens are the subject of comprehensive investigation under the supervision of A.T. Kravchenko, F.K. Kashaik, and a number of others.

In the last five years theoretically and practically important research has been done. Thus, the principles were developed of symptomatic research.

PONOMAR; Ye. K.

IN THE PRESIDING OF THE USSR ACADEMY OF MEDICAL SCIENCES

[Article\* by Ye. K. Ponomar' (Moscow); Moscow, Vestnik Akademii Meditsinskikh Nauk SSSR, number 1, 1972, pp 91-92]

SPRS 55320  
1 MAR 72

The research plan of the Institute, includes problems dealing with forecasting of possible morbidity levels referable to the main nosological forms in obstetrics and gynecology, as well as investigation of the effect of certain industrial organophosphorus compounds on the fetus. A group has been formed for introducing updated mathematical methods (using electronic computers) in scientific work, and the necessary equipment has been acquired. Much work has been done with regard to transfer of case history data on punchcards and these data have been forwarded to the computer station for processing. Much in accordance with the designated problem. A summary plan has been prepared for making practical use of the Institute's achievements as well as for developing new instruments and equipment in collaboration with other institutions. These plans are being fulfilled in accordance with the set target dates.

A set of investigations is in progress on the use of modern optical methods in obstetrics and gynecology (ultraviolet and fluorescence contact microscopy, cytospectrophotometry, thermography, and others).

Joint scientific research is practiced widely by the Institute. Of the 91 scientific problems stipulated in the plan, 68 (dealing with health care for women other than that related to pregnancy, pathogenesis of disturbances in correlations between the maternal organism and fetus, endocrine pathology in women) are being conducted by several different Institute departments and laboratories; 11 problems are being developed in collaboration with other scientific research institutions; 12 instances in different specialties of the USSR AS [Academy of Sciences], USSR MS [Academy of Medical Sciences] (Institute of Experimental Medicine), and of the USSR Ministry of Health, and others; three problems are being developed with contact with foreign (Poland and Bulgaria) scientific institutions.

\*Beginning in No 12 of this Journal, 1971.

USSR

UDC 533.6.013.42

VOL'MIR, A. S., PONOMAREV, A. T., and POPLYALOV, S. A., Moscow

"The Behavior of a Wing Panel in a Transitional Mode in a Gas Stream"

Moscow, Prikladnaya Matematika i Mekhanika, Vol 37, No 2, Mar - Apr 1973,  
pp 247 - 253

Abstract: The subject of study is a rectangular wing moving at a zero angle of attack in an ideally compressible fluid and subject to an instantaneous change in the angle of attack as a result of a vertical gust, causing small, unstable movements of the panel. The procedure applies for air speeds from  $M = 0$  to  $M = 2$ ; the example uses  $M = \sqrt{2}$ . The solution is based on a wave equation of linearized unstable aerodynamics and on geometrically nonlinear equations from the theory of flexible plates. The equations describing the behavior of the elastic system are solved by applying the Bubnov-Galerkin procedure along one coordinate and finite difference methods along the other coordinate and over time. The distribution of aerodynamic pressure on the panel surface is based on the model of a thin bearing surface, using the numerical method of retarded potential from a source, taking the history of the deformation process into account. There are two diagrams and four graphs of numerical results from the example. The method not only permits the determination of the deformation of the median surface and the pressure distributions over time, but makes it possible to find dangerous stresses in the

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VOL'MIR, A. S., et al., Moscow, Prikladnaya Matematika i Mekhanika, Vol 37, No 2,  
Mar - Apr 1973, pp 247 - 253.

design in the transition mode and to discover stable oscillations.

2/2

- 6 -

Pulse Technique

USSR

UDC A678.02:66.097 +1

ABRAMYAN, Ye. A., VOROB'YEV, V. V., YEGOROV, A. A., YELKIN, V. A.,  
and PONOMARENKO, A. G.

"Initiating the Discharge in a Megavolt Gas Space by an Electron Beam"

Moscow, Pribery i tekhnika eksperimenta, No. 1, January-February, 1971, pp 117-118

Abstract: This paper describes the experimental method and results in the use of an electron beam to start the discharge in a gaseous gap. The high voltage of 0.2 to 1 MV is supplied by a Tesla induction transformer, with the capacitance formed by the transformer electrode and the transformer's grounded casing playing the part of the discharge gap. This casing is filled with gas at a pressure of 12 atmospheres, with the electron beam injected, with an energy of 150 to 400 kev and a current of 10 A in the course of 5 ns, into the center of the gap, which has a length of 4 cm. The injection is made through a 1-cm diameter window of fine foil. A sketch of this equipment is provided. Photographs of the discharge are reproduced.

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AT0032095

NUCLEAR SCI. ABST. 2-70

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6511 (NP-tr-1862) SOME ASPECTS OF HEATING A  
PLASMA BY A STRAIGHT DISCHARGE CURRENT. Koydan,  
V. S.; Papyrin, A. N.; Ponomarenko, A. G.; Yablochikov, E. Ya.  
(Akademiiya Nauk SSSR, Novosibirsk, Institut Tverdoy Materii).  
Translated for Culham Lab., Abingdon, Eng., from Preprint  
No. 241. 10p. (CTO-655). Dep. CFSTI (U. S. Sales Only).

New experimental results on the turbulent heating of plasma by  
the current of a straight discharge are reported. It is shown that  
for different current shapes the potential drop in the plasma col-  
umn is concentrated in a region of ~5 cm and may move along the  
discharge gap. The maximum anomalous resistivity and gap volt-  
age coincide with the instant of the abrupt drop of the current, and  
this moment coincides with the return electron current to the cath-  
ode. The onset of turbulence is characterized by a spreading of the  
plasma column to the chamber walls. Possible causes of the ob-  
served effects are suggested. (auth)

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USSR

UDC: 53.07/08+53.001.89.

AFONIN, Yu. V., PONOMARENKO, A. G., SOLOUKHIN, R. I., and KHAPOV, Yu. I.

"Compact Electron Pulse Accelerator With Independent Power Supply"

Moscow, Pribery i Tekhnika Eksperimenta, No 5, 1973, pp 20-22

Abstract: Research in CO<sub>2</sub> ionization lasers under high pressure and plasma experiments for modeling conditions of accelerated particle generation in solar or terrestrial plasmas require high-powered electron pulse sources. The device described in this paper has been designed for such research, has small dimensions and an independent power supply, and can be remotely controlled, thus rendering it convenient for use under space conditions. The basic circuit of the electron accelerator is given, together with a block diagram of the power supply and remote control system. Pulse power of the electron accelerator is  $4 \cdot 10^8$  watts, and the coefficient for the conversion of the electric field energy into electron-beam kinetic energy is 25%. The authors express their gratitude to V. A. Kornilov and B. V. Kulikov for their assistance with the design of the instrument.

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USSR

PONOMARENKO, A. I.

"Random Fields Homogeneous in the Broad Sense in Semigroups and Homogeneous Spaces with Value in Banach Space"

Teoriya Veroyatnostey i Mat. Stat. Mezhd. Nauch. sb. [Theory of Probabilities and Mathematical Statistics, Interdepartmental Scientific Collection], 1972, No 7, pp 110-121 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V157 by the author).

Translation: Generalized left (right) homogeneous random fields in Banach space  $X$  are studied in semigroup  $\mathcal{Q}$  with unity and involutive anti-automorphism  $g \rightarrow g'$ , defined as the set  $\mathcal{E}g, g \in \mathcal{Q}$  of limited linear mappings  $X^*$  in the Hilbert space of random second order quantities, for which co-variation  $R_{s,g}$

$$M(\mathcal{E}_s x^*)(\mathcal{E}_{g'} y^*) = (R_{s,g'})(x^*), \quad x^*, y^* \in X^*$$

depend only on the product  $s'g(sg')$ . Problems of harmonic analysis of such fields are studied, as well as similar fields with invariant covariation, defined in homogeneous spaces. Operator, positively defined kernels and operator measures are described, the values of which are antilinear limited operators from  $X$  in  $X^*$ .

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